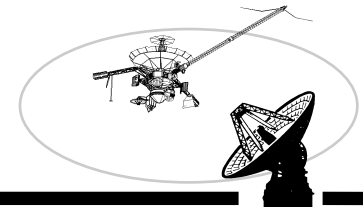


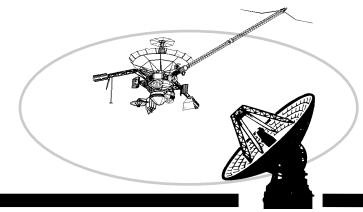
DSS-65 Down Time Readiness Review Supplemental for ACR

April 6, 2005



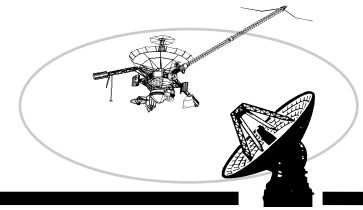
Review Board

- Gene Burke (Chair, RAP Office Manager)
- Fred Battle (Safety Engineer)
- Paula Brown (Division 33)
- Dennis Buck (OEM)
- Mike Coluzzi (ITT Engineering Manager)
- Jim Hodder (DSN Operations Manager)
- Chuck Klose (IV&V Manager)
- Pablo Perez (MDSCC – in spirit)



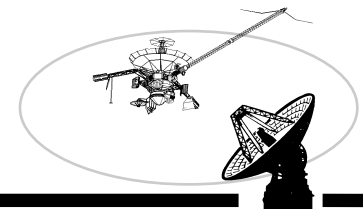
Review Criteria (813-101, Rev D)

- Detailed schedule is credible and supporting personnel are available
- Hardware modkits are on-site at least 3 weeks before start of downtime
- All planned pre-installation testing is complete
- Installation instructions are complete and reviewed by OE and site engineering personnel
- Spares shipped to site per MSA
- On-site facilities, tools, and personnel are available
- Training materials are ready for release, training sessions have been scheduled
- All required test procedures in final form
- The AT TRR has been successfully completed



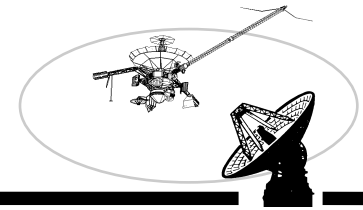
Agenda

- Down Time Overview – S. Morgan
 - Hardware Modkit Status – A. Bernardo
 - Software Modkit Status – M. Strain
 - Test Plans and Status – K. Shimizu
 - OE Status Report – M. Wert
- Installation/Test Schedule – A. Bernardo
- Complex Readiness – P. Perez
- Board Discussion



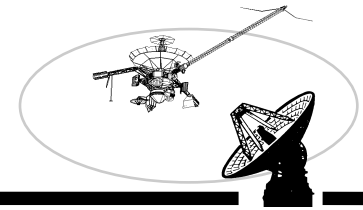
Review Scope

- ACR portion of DSS-65 downtime 4/18/05 – 7/29/05
- Review is limited to the status of the Antenna Controller Replacement (ACR) task
 - Antenna re-commissioning and any remaining efforts related to relocation are not included
- Review content specified by 813-101
 - Material presents a summary of the readiness for installation and testing



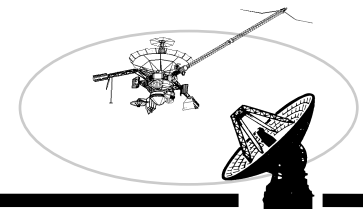
Associated Tasks

- USC installation and checkout to be completed in parallel.
 - No problem with resources per MDSCC
 - No technical reason that prevents a parallel installation



Delivery Dependencies

- None
 - NSP/DTT version 5.5.2 installation will be completed before ACR installation begins

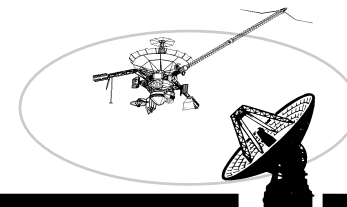


Overall Plan/Status

- Hardware modkits have been delivered and are ready for installation
- Software and firmware has been thoroughly tested in antenna simulation lab
 - On-antenna testing is required to fully qualify software/system for operational use and complete acceptance testing
 - Formal software and system AT will be conducted at DSS-65
 - Software TRR will be held after initial on-antenna testing is completed and any criticality 1 anomalies are corrected (before end of June)
- Software and firmware will continue to be tested at JPL until Pre-AT start at DSS-65 (late April)
- Schedule has been created for the ACR down time period
 - Approximately 20% slack in critical path
 - Tasks will move at the fastest possible pace

INTERPLANETARY NETWORK DIRECTORATE

Antenna Controller Replacement DSS-65 Down Time Readiness Review



Hardware Modkit Status

CI	Name	ETA	Shipping Status	Pre-Installation	Liens	Installation Procedure	Training Material
105.319	Cables	040181, EDCL2	received MDSCC	in progress	None	Released	not applicable
105.320	ALC	040187, EDCL3	received MDSCC	in progress	None	Released	Outline Available
105.340	ASA	040180, EDCL3	received MDSCC	no	None	Released	Outline Available
105.350	SSA	040183, EDCL3	received MDSCC	no	None	Released	Outline Available
111.107	ACA	040185, EDCL4	received MDSCC	in progress	1*	Released	Outline Available
111.109	ARA	040184, EDCL3	received MDSCC	in progress	None	Released	Outline Available
111.119	AMC	040186, EDCL5	received MDSCC	no	None	Released	Outline Available
111.121	AMT	040182, EDCL4	received MDSCC	no	None	Released	Outline Available
243.101	SCA	040189, EDCL3	received MDSCC	in progress	None	Released	Outline Available

Notes:

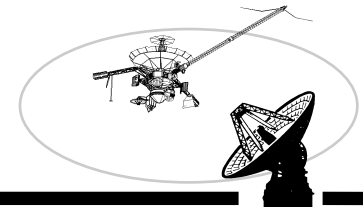
*

P/N: 9617565, Cover Plate, Rack

Closure date: 9/30/2005

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Antenna Controller Replacement DSS-65 Down Time Readiness Review

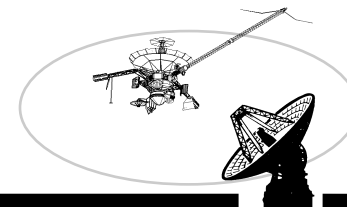


MESkit Status

CI	Name	ETA	Shipping Status	Liens
105.319	Cables	None	None	None
105.320	ALC	in process	received DLF	None
105.340	ASA	040180, MDCL4 (MSA#16)	received MDSCC	None
105.350	SSA	040183, MDCL4 (MSA#16)	received MDSCC	None
111.107	ACA	040180, MDCL4 (MSA#16)	received MDSCC	None
111.109	ARA	040180, MDCL4 (MSA#16)	received MDSCC	None
111.119	AMC	040180, MDCL4 (MSA#16)	received MDSCC	None
111.121	AMT	040180, MDCL4 (MSA#16)	received MDSCC	None
243.101	SCA	040181, MDC<4 (MSA#37)	received MDSCC	None

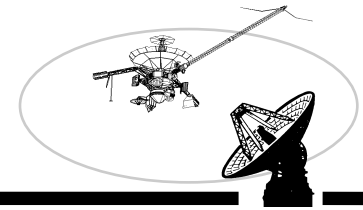
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Antenna Controller Replacement DSS-65 Down Time Readiness Review



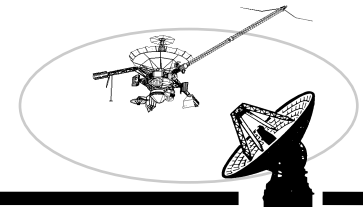
Software Modkit Status

Assy.	Name	Test Procedure	Testing Status	SOM/UG	RDD	Expected Liens	Training Material	SWTA
105.321	ANT Logic Controller ANT-6200-OP-A, v1.310	HTP 869-000118 HTP 869-000119 Released	Pre-installation test	UG 867-000056 Released	888-000129 Draft in SPMC	None	Outline available	Post-AT
105.322	ALC User Display ANT-6201-SP-A, v1.0.1	"	Pre-installation test	"	"	None	"	Post-AT
111.108	ANT Control Assy. ANT-6140-OP-B,v1.1.0	STP 889-000127 Draft in SPMC	Pre-installation test	SOM 837-024 Draft in SPMC	888-000056 Draft in SPMC	None	Outline available	Post-AT
111.110	ANT Recorder Assy (ACA Maint Terminal)	"	Pre-installation test	"	888-000055 Draft in SPMC	None	"	Post-AT
111.120	ANT Monitor & Control ANT-6146-OP-B,v1.1.0	"	Pre-installation test	"	888-000054 Draft in SPMC	STP, SOM	"	Post-AT
111.122	ANT Maintenance Terminal ANT-6147-SP-B,v1.1.0	"	Pre-installation test	"	888-000055 Draft in SPMC	None	"	Post-AT
111.123	ANT Displays ANT-6299-OP-B,v1.1.0	"	Pre-installation test	"	888-000189 Draft in SPMC	None	"	Post-AT



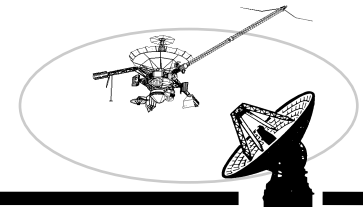
ACR Software Modkit Status

- All documentation in SPMC as drafts
- Anomalies will be entered into AAMS before the S/W Test Readiness Review
 - Anomalies found during preliminary installation testing have been entered into Harvest



ACR Software Builds

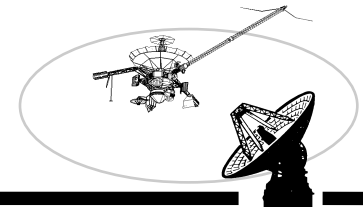
- Pre-installation v1.1.0 and ALC v1.310
 - Supports pre-installation testing
- PAT build
 - Used for DSS-65 PAT
 - Test corrections for high criticality anomalies and for DSS43
- AT builds
 - Incorporate changes required during DSS65 check-out



ACR Build Schedule

Planned

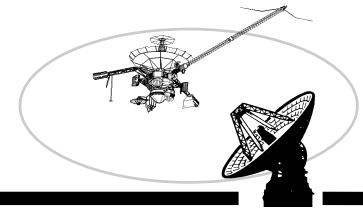
- Pre-installation version 1.1.0 Mar. 28 - completed
 - ALC PAT v1.310 Mar. 28 - completed
 - PAT version 1.1.1 Apr. 25
 - AT version 1.1.2 June 16
 - Software TRR June 20
-
- Note: DOSL is functional at SPC-60 and will be used to transfer SPMC-generated media to DSS-65



Software Anomalies

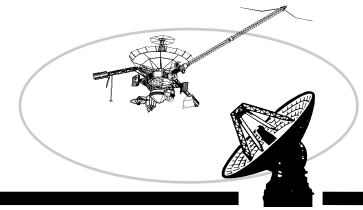
- Criticality 1
 - None remaining in versions currently undergoing testing
- Criticality 2

IAR	Crit.	Description
IAR-01429	2	ALC subreflector module fault sets antenna brakes
IAR-01430	2	Clip subreflector rate limit 1.17



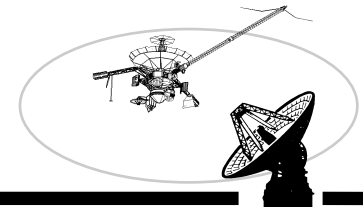
Training Plans

- Operations training
 - 2 operators from each crew will be trained in a 2 hour session(s)
 - Crews will be encouraged to shadow track spacecraft overnight to gain experience and help test the system
- Maintenance training
 - Majority of training will be hands-on
 - Additional 1-2 hour classroom session(s), as needed



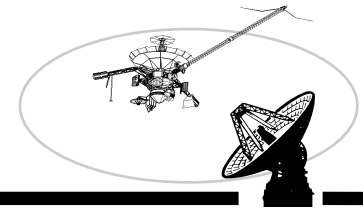
DSS-14 Status

- Continue to monitor DRs since return to Operations on January 10 1600 PST
 - So far, no changes required due to any problems associated with DSS-14 operation



ACR Testing Schedule

- Pre-Installation testing version 1.1.0 (JPL) Mar 28-Apr 22
- Integration and Test (Pre-AT version 1.1.1) Apr 27-May 25
- Antenna and S/R HTP AT May 25-31
- Antenna and SR Servo Performance Testing May 31-June 8
- Software TRR June 20
- Subsystem AT (SITP) (AT version 1.1.2) June 23-Jul 12
 - Includes shadow spacecraft tracks
- Fix and Regression AT July 12-19
- Antenna available for OTP Aug 1
 - Includes PITs/Demos, as specified by OTP
 - To be coordinated by Gil Roldan
- SITP Volume 3 report submitted to SPMC Aug 31

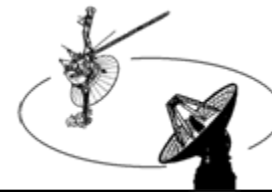


Pre-Installation Test Plans and Status

- Current software testing
 - Lab and at DTF-21
 - Includes DSS-65 (HEF implementation)
 - Limited DSS-43 testing
 - Build Versions: AMC/ACA - V1.1.0, ALC - V1.310
 - 90% of all test cases from STP performed
 - Most functional areas 95-100% complete
 - DSS-65
 - Servo baseline data collection at new location
- Future software testing in lab
 - HEF implementation to include fix verification and regression
 - DSS-43 (70M, Southern Hemisphere) implementation
- SITP draft submitted to SPMC
 - 839-0052, HEF specific

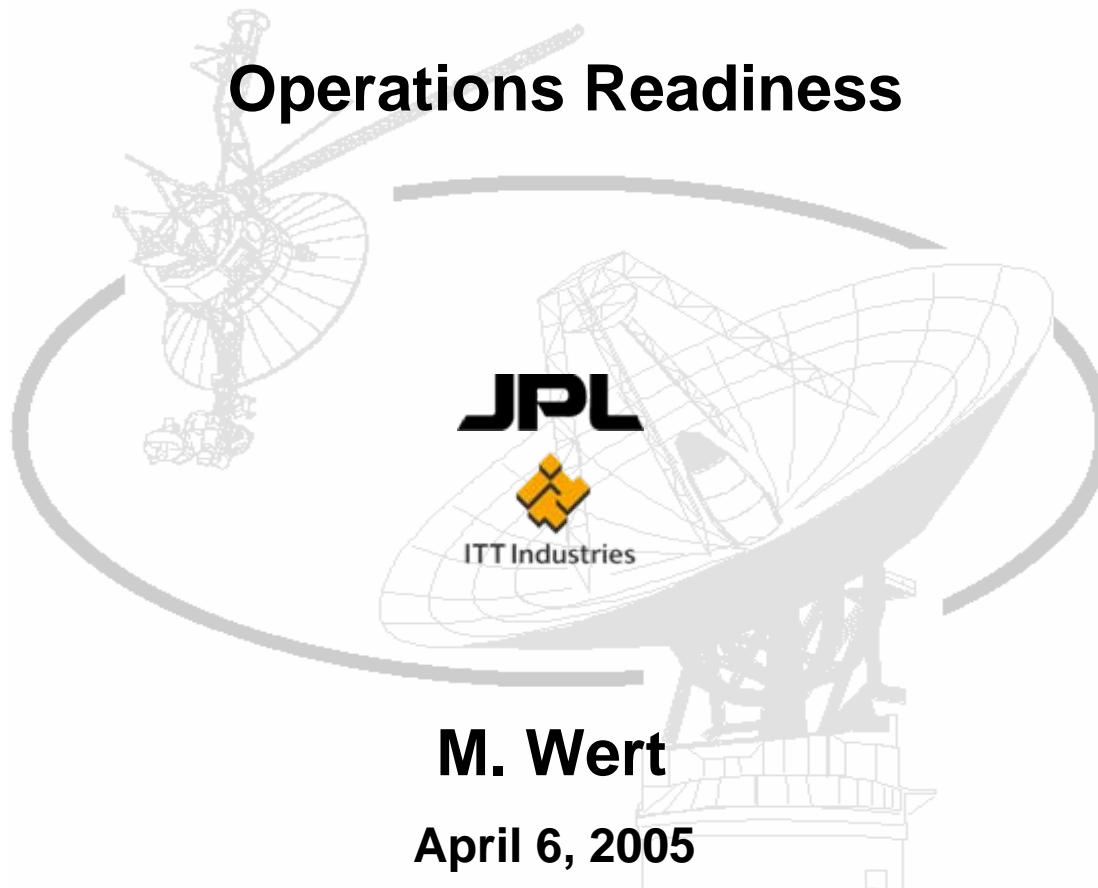


INTERPLANETARY NETWORK DIRECTORATE
Antenna Controller Replacement
DSS-65 Down Time Readiness Review



JPL

Operations Readiness



M. Wert

April 6, 2005



ITT Industries



INTERPLANETARY NETWORK DIRECTORATE
Antenna Controller Replacement
DSS-65 Down Time Readiness Review



Operations Readiness

- Summary of Anomalies:
 - OE observed testing to-date
Engineering CM builds (AMC2/ACA/ANTDISP ver 1.1.0, ALC ver 1.310, AUD ver 1.01)
 - 39 test cases observed of 92 in draft STP2 (42% case completion)
 - OE observed significant anomalies (crit-2 or above) to-date
 - 2 crit-2 anomalies
 - Failure of S/R module in ALC results in antenna brake setting, generates one-time alarm to NMC operator, but leaves no permanent indication on operator display of ALC module fault
 - Provision of S/R rate limit (via SMF or OD) at current HEF capability (1.2 in/min) results in S/R axis runaway into hardware limit
 - TBD crit-2 and/or crit-1 ARs in remaining 58% of test case examination
- Summary of Workarounds:
 - None identified at this time
- Summary of Functional Deferrals:
 - CDE has requested deferral of IIRV predicts processing at HEF



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Antenna Controller Replacement DSS-65 Down Time Readiness Review



JPL

Operations Readiness (cont'd)

- Status of Operations Procedures:
 - None of these operations documents (843 SOPs / 871 series NOPs) currently contains syntax for ANT operator directives
 - ACR is not removing specifically-referenced functionality
 - Conscan
 - Planetary mode (MSPA use)
 - No revisions expected
- Plans for Engineering Demonstration Tracks
 - As presented, and agreed to, at the DSS65 DTRR (part 1)
 - Projects will be requested to participate and schedule an Eng Demo in the 8/15-8/29 time frame.
 - The following projects will be requested to participate Cassini, STF, M01O, MGS, and MSGR.
 - Two Eng Demos per project required to evaluate the relocation and ACR installation



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Antenna Controller Replacement DSS-65 Down Time Readiness Review



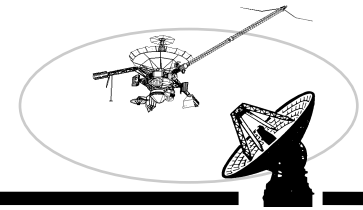
JPL

Operations Readiness (cont'd)

- Plans for SPTs
 - As presented, and agreed to, at the DSS65 DTRR (part 1)
 - Tests to be run were identified by ITT Performance Analysis and conveyed to Pablo Perez and Jesus Calvo by G. Roldan / S. Hampton
 - Allan Deviation / Phase Noise
 - Ramping Doppler
 - Telemetry Bit Error Rate
 - Tests TBS by MDSCC to fit within 8/1 – 8/31 time frame
 - The generic 34m OTP 803-224 contains details on each test (time requirements, configuration, and reporting)

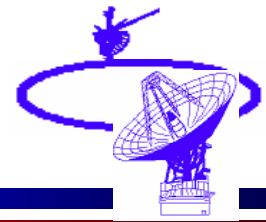


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Installation/Test Schedule

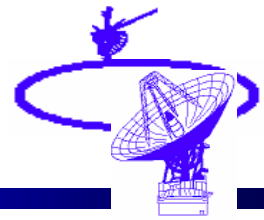
- Detailed schedule available
- Schedule has been reviewed by JPL CDES and MDSCC engineering staff
- Schedule summary
 - Total downtime is 80 work days, including 19 days free slack in critical path
 - ACR Installation start , 4/19/2005
 - Remove/Install, 4/19-5/6
 - Remove 3 racks, FIM Cabinet
 - Modify ANT & SR Cabinets
 - Install 3 racks and ALC
 - Includes slack
 - Power-on/Checkout, 5/6-5/25
 - Ant & SR Drive Cabinets
 - 3 racks (ASI,SSI,AMC)
 - ALC
 - ANT & SR HTP, 5/25-5/31
 - ANT & SR Performance Testing, 5/31-6/8
 - SITP, 6/23-7/29
 - Includes fix, regression testing, slack
 - Antenna available for OTP, 8/1/2005



MDSCC READINESS STATUS

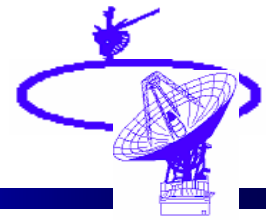
WE ARE READY!!!!

P. Perez



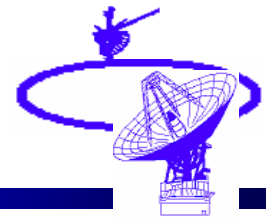
DSS-65 ACR READINESS REVIEW

- ANTENNA RELOCATION ACTIVITIES COMPLETED
- MTC DEMOBILIZED MARCH 31ST
- ANTENNA IS BEING OPERATED USING ASI & PCU AT FULL RATE, IT RUNS VERY SMOOTH.
- ANTENNA SERVO FULLY RE-CONNECTED.
- OPERATIONS FROM CONTROL ROOM RE-ESTABLISHED.
- REPEATING ANTENNA BASELINE TESTING TO VERIFY FUNCTIONALITY. WE EXPECT TO COMPLETE THEM ON APRIL 1ST



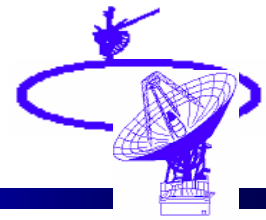
DSS-65 ACR READINESS REVIEW

- TIMING AND LNA'S ARE NOT YET AVAILABLE PRECLUDING ANY KIND OF TRACK ACTIVITIES.
- INITIAL NEW SYSTEMATIC ERROR MODEL WILL BE DEVELOP AS SOON AS ABOVE ITEMS ARE COMPLETED.
- VLBI TRACK TO DETERMINE EXACT ANTENNA LOCATION WILL BE PERFORMED RIGHT AFTER.



DSS-65 ACR READINESS REVIEW

- ALL ACR HARDWARE MODKITS ON SITE
 - 93.0047 105.319 ACR CABLES
 - 93.0047 105.320 ALC
 - 93.0047 105.340 ANTENA SERVO ASSEMBLY
 - 93.0047 105.350 SUBREFLECTOR SERVO ASSEMBLY
 - 93.0047 111.119 AMC
 - 93.0047 111.121 AMT
 - 93.0047 111.107 ACA
 - 93.0047 111.109 ARA
 - 93.0047 243.101 SCA

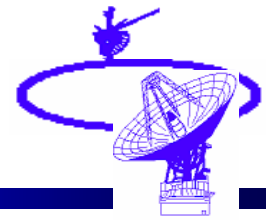


DSS-65 ACR READINESS REVIEW

- MESKITS ON SITE:
 - ANTENNA SERVO ASSEMBLY (4 BOARDS)
 - AMT (SUN STATION)
 - AMC(1 CPU,1 HD, 4 PCB'S, 1 PS)
 - ACA (SUN FIRE)
 - ARA(SAME AMT SUN)
 - SUBREFLECTOR SERVO ASSEMBLY (1 PS, 1 DATA CONV.,1 PCB).

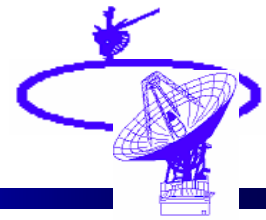
MESKIT PENDING:

- ALC MDCL 105.302 .



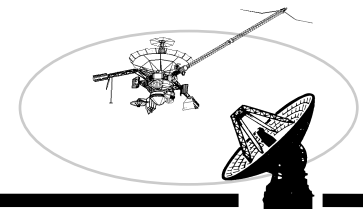
DSS-65 ACR READINESS REVIEW

- IMPLEMENTATION PROGRESS
 - SUBREFLECTOR PCU J-BOX INSTALLED
 - CABLE FROM AZ ROOM TO APEX INSTALLED
 - ACA/ARA RACK IS INSTALLED AT THE CONTROL ROOM. CONNECTED TO POWER AND DLS CONNECTIONS ARE AVAILABLE
 - ECO TO MODIFY RATE LOOP DUE TO NEW GEAR REDUCERS RATIO IS DONE.



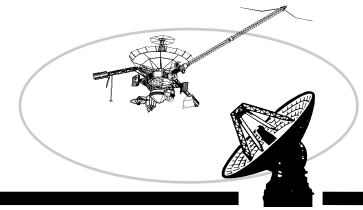
DSS-65 ACR READINESS REVIEW

- MDSCC SERVO STAFF WILL WORK MONDAY TO FRIDAY FROM 08:00 TO 17:30.
- THERE'S ENOUGH MANPOWER ALLOCATED TO COPE WITH THE HARDWARE MODIFICATIONS.
- SUPPORT FROM CMF AND ELECTRICIANS IS AVAILABLE.



Risks

- First HEF installation may result in unknown problems, schedule delay
 - DSS-65 on-antenna testing represents the first opportunity to test with real HEF hardware
 - Mitigation: Schedule has been constructed with greater than 20% slack in critical path
- Relocation may have damaged some antenna control equipment that is not being replaced by ACR
 - Mitigation: MDSCC personnel have performed a functional checkout of the antenna control system



Summary

- ACR DSS-65 implementation is ready to go
- To-Do List
 - TRR to be held after initial on-antenna testing
 - Test documents, procedures and reports, to be released after on-antenna testing is completed
 - DDR – combined with DSRR or standalone?
 - Pablo awaiting DTRR minutes/decision for installation start